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5.0 MITIGATION AND UNAVOIDABLE IMPACTS

None of the preferred alternatives in this final HMS FMP are likely to have significant adverse ecological impacts. The alternatives for workshops were designed to reduce mortality of sea turtles and other protected species. The alternatives for time/area closures were chosen to help protect spawning aggregations of gag grouper and to provide greater transparency to the affected public regarding the use of time/area closures to reduce bycatch.

The preferred alternative for northern albacore tuna would not have any ecological impact until ICCAT implements a rebuilding plan. To reduce mortality of northern albacore tuna, such a plan could include size limits, bag limits, or reductions in overall quotas. If such a plan were implemented, it could result in some regulatory discards because fishermen may continue to target other species and have to discard albacore bycatch. The current fishery averages about 25 percent below the existing allocation. Thus, the reduction in allocation as part of the rebuilding program would have to be greater than 25 percent per year on average before U.S. fishermen would begin to discard northern albacore.

The preferred alternative for finetooth sharks, which would implement a plan to identify sources of finetooth shark fishing mortality to target appropriate management actions, may not reduce fishing mortality on finetooth sharks in the short-term. Nevertheless, it is necessary to understand fully the extent and contribution that all fisheries may be contributing to finetooth shark fishing mortality. At that point, NMFS will consider initiating effective management measures to prevent overfishing. The majority of commercially landed finetooth sharks are harvested with gillnet gear by vessels that possess both HMS and non-HMS permits, or participate in fisheries that are not currently managed. Expanded observer coverage has shown that fisheries targeting non-HMS using sinknets and under the jurisdiction of other management entities are also responsible for finetooth landings. Management measures aimed solely at gillnet vessels targeting sharks might not be effective at preventing overfishing of finetooth sharks as these measures could be circumvented or may result in additional dead discards of finetooth sharks because these fishermen would continue to target non-HMS with gillnets and land finetooth sharks incidentally. A number of sources of finetooth shark mortality remain unclear. The Agency remains committed to obtaining more comprehensive information on finetooth shark landings from observers and other management entities. This information will be used to implement effective management measures that prevent overfishing for finetooth shark stocks, while minimizing dead discards and mitigating any associated economic and social impacts.

None of the preferred alternatives for reducing Atlantic billfish mortality from directed fishing are anticipated to have adverse ecological impacts. No significant changes in angler behavior are expected given the current high levels of participation in catch-and-release activities by Atlantic billfish fishermen. However, NMFS cannot predict angler behavior. Adverse ecological impacts to other species could occur if: 1) anglers shift their effort to other species, or 2) change their behavior significantly in reaction to the required use of circle hooks in billfish tournaments (on HMS permitted vessels when deploying natural bait or natural/artificial bait combinations) or potential in-season changes to minimum sizes or retention limits that could be enacted should the 250 marlin landing limit be approached or achieved. These shifts or changes could potentially result in increasing discards and retention of those species.

The preferred BFT management measures are not expected to have significant adverse ecological impacts. The General category time-period subquotas would not alter overall levels of mortality, but could likely shift where and when it occurs. Effort may increase in some areas and decrease in others, but overall effort should remain consistent because the amount of harvestable BFT quota is finite, and is not being changed. Interaction rates with protected species and other marine life may shift with localized effort shifts, but these interactions are difficult to quantify due to data limitations. The General category is only allowed to use handgear (rod and reel, handline, and harpoon) to harvest BFT and handgears typically have low interactions rates with protected resources in comparison to other gears, therefore any increases in interaction rates are expected to be minimal. Clarifying the procedures for calculating the Angling category school size-class BFT subquota allocation would result in a slight increase (0.02 percent or 2 mt) in the school BFT baseline quota allocation; however, any increase in effort or changes in fishing practices attributed to this slight quota increase are anticipated to be small. The slight increase in mortality is covered under ICCAT quota recommendations as well as the 20-year rebuilding plan established for BFT. The small orders of change associated with the preferred alternatives, quantified in either numbers of fish or in weight (mt), or time and/or location of harvest, compared to overall U.S. harvest levels, as recommended by ICCAT, equate to ecological impacts that are unlikely to be measurable in terms of variability in the data used to conduct stock assessments. Changes in inseason actions and specifying the season are administrative in nature and should not have any adverse ecological impacts.

Changing to a calendar-based fishing year is administrative in nature and should have no adverse ecological impacts. As described earlier, there is a small potential for negative economic and social impacts to billfish fisheries/tournaments at the end of a calendar year if the ICCAT 250-marlin limit threshold for catch-and-release fishing is reached.

The preferred alternatives for authorized fishing gear are not anticipated to dramatically increase effort, and therefore would likely not result in significant increases in landings or landings rates of HMS or other species with which HMS fishermen interact. The Agency does not expect the use of these gears to increase interactions with protected resources but will monitor the use of these gears, as appropriate.

The preferred alternatives in the regulatory housekeeping section, as a suite of management measures, are projected to have minor positive conservation benefits for HMS, bycatch species, and protected resources with minimal social or economic impacts on HMS fishery participants.

5.1 Mitigation Measures

Mitigation measures are measures that avoid, reduce, or minimize the effects of the preferred alternatives. According to the Council for Environmental Quality regulations at 40 CFR § 1508.20, mitigation measures may include the following types of actions: (a) avoiding the impact altogether by not taking a certain action or parts of an action; (b) minimizing impacts by limiting the degree or magnitude of the action and its implementation; (c) rectifying the impact by repairing, rehabilitating, or restoring the affected environment; (d) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and, (e) compensating for the impact by replacing or providing substitute resources or environments.

No mitigation measures were considered for the preferred alternatives of the time/area closures, northern albacore tuna, finetooth sharks, or authorized gear sections. NMFS would monitor the impacts of the preferred alternatives for these issues and would consider mitigation measures in the future as necessary.

The preferred workshop alternatives are likely to result in some negative economic impacts as a result of participants having to attend workshops, incurring travel costs and lost fishing time. To mitigate this potential impact, the Agency intends to host a number of workshops in regional fishing hubs and to provide a delay in effective date to give participants a chance to attend the workshop most convenient for them. Additionally, the Agency would strive to coordinate these workshops in order to reduce the time required to be away from fishing, work, and family responsibilities. The Agency is also allowing shark dealers to designate proxies for the mandatory HMS identification workshops. In the future, NMFS may consider ways to reduce travel time by expanding workshops to include Internet or video-based training opportunities.

As described in Chapter 4, the adverse socio-economic impacts of the preferred alternatives for Atlantic billfish would likely be minor, with possibly heightened local impacts in some instances. Consistent with public comment, to mitigate potential adverse impacts, NMFS is preferring to delay the effective date of new management measures. The delayed effective dates should allow anglers, tournament operators, tackle dealers, and hook manufacturers to adjust for new regulations prior to implementation. Anglers and charter headboat operators would have the opportunity to become comfortable and proficient in the use of new gears, as well as adjust fishing or business practices to prepare for the possibility of in-season changes to size limits and or retention limits, if triggered under the 250-marlin limit. Tournament operators would have time to adjust tournament rules and formats to accommodate new regulations in ways that could minimize confusion over gear requirements and mitigate potential decreases in participation. Shoreside businesses would also have time to reduce existing stockpiles of J-hooks. Further, allowing continued use of J-hooks outside of tournaments, and within tournaments on artificial lures, minimizes and substantially mitigates any potential minor adverse impacts from tournament circle hook requirements by allowing anglers to continue using existing quantities of J-hooks; tackle dealers to reduce existing inventories and adjust purchasing patterns, if necessary; and, hook manufacturers to adjust production, as appropriate. The preferred circle hook alternative may create short-term decreases in angler consumer surplus resulting from a perceived or real loss of fish as anglers adapt and become proficient with circle hooks. However, available studies on circle hooks show that catch rates on circle hooks are equal to or greater than for with J-hooks for some HMS. Therefore, as anglers become proficient in the use of circle hooks, the alternative may increase angler consumer surplus in the long-term. Further, this alternative should assist in rebuilding Atlantic billfish populations and could result in increased angler consumer surplus through elevated interactions. Also, while anglers will have initial capital expenditures to acquire circle hooks, they are generally somewhat less expense than J-hooks. Thus, the preferred alternative may result in negligible long-term economic benefits. It is also important to note that participation in billfish tournaments is voluntary on the part of HMS anglers. As such, any costs associated with circle hook requirements under the preferred alternative would be incurred by choice and could be avoided by choosing not to fish in billfish

tournaments. The alternative implementing the ICCAT landing limit was specifically crafted to minimize disruption and adverse impacts in the billfish fishery by allowing the Agency to slow landings (via an in-season minimum size increase) and thereby potentially preventing a more disruptive closure of the directed marlin fishery.

No specific mitigating measures were considered for any of the preferred alternatives for BFT management. While shifting the General category time-periods may result in less quota during some months, the regulations do not constrain fishermen to fishing in any one particular month. Provided they have the capability and the fishery remains open, fishermen may travel to where the fish are available regardless of the time of the year.

Changing to a calendar-based fishing year would require a transition period. Currently, NMFS prefers allowing for a seven-month transition where vessels participating in the tuna and swordfish fisheries could catch an entire year's worth of quota in seven months. The actual impacts of such a transition would be analyzed in a future rulemaking.

As described earlier in this document, many of the changes contained in the Regulatory Housekeeping section would have no effect either individually or cumulatively upon the human environment, and are consistent with the intent of previously analyzed and approved management actions. Therefore, alternatives have not been developed or analyzed for these measures. For the 11 more substantive measures, alternatives have been developed and analyzed. However, several of these would not implement new regulatory requirements. The preferred alternatives would either clarify or reinforce existing regulations, or facilitate modernized reporting procedures. For six issues, the preferred alternatives are expected to produce minor ecological benefits with few social or economic costs, and no mitigating measures are necessary. Similarly, the impacts associated with the preferred alternatives for the five, more substantive, issues in the Regulatory Housekeeping section are expected to be minor.

The preferred alternative to differentiate between pelagic and bottom longline gear in HMS closed areas, I1(c), would retain the existing definitions for these gears, but limit the amount of pelagic species that bottom longline vessels may possess or land when fishing in pelagic longline closed areas, and limit the amount of demersal species that pelagic longline vessels may possess or land when fishing in bottom longline closed areas. A five-percent threshold for the species composition of catch was chosen because it is consistent with the vast majority of commercial fishing operations, which have, on average, remained below the threshold. However, logbook data indicates that the threshold would have been exceeded on a fishery-wide basis in 2004. It is, therefore, possible that implementing a five-percent threshold to account for unavoidable bycatch in HMS closed areas could potentially lead to regulatory discards. NMFS is aware of this possibility and will continue to monitor the PLL and BLL fisheries to determine if the 2004 exceedance was anomalous, or part of a continuing trend. A preferred alternative in the Draft HMS FMP to restrict the number of floats is no longer preferred, based on public comment concerning difficulties with defining floats and concerns with enforceability of the measure. The list of demersal "indicator" species was modified from the proposed rule due to public comment by removing silky sharks and three species of hammerhead sharks, because these species could potentially be caught on both pelagic and bottom longlines. Also, three species of tilefish are added to the list of demersal "indicator" species, because these

species are indicative of bottom longline fishing activity, and based on public comment. If necessary, both the five-percent threshold and the list of "indicator" species could be further revised in the future to mitigate any adverse impacts, based upon a review of historic and current landings, and the effectiveness of the regulation. NMFS intends to continue to assess the need for, and potential effectiveness of, gear-based criteria to differentiate between PLL and BLL gear. If needed, such criteria could be developed in consultation with the fishing industry to further improve the monitoring of, and compliance with, HMS closed areas. NMFS anticipates that HMS longline vessels will continue to be prudent, especially when fishing in the HMS closed areas by catching predominantly pelagic species in BLL closed areas, and demersal species in PLL closed areas.

The preferred alternative, I2(b), that would require the second dorsal and anal fins to remain on all sharks through landing, is expected to produce ecological benefits and, in the long-term, aid in rebuilding large coastal sharks. Any adverse ecological impacts associated this alternative, in comparison to the alternative that would require all fins to remain on all sharks through landing, should be mitigated by other requirements in the final rule that would require shark dealers to attend species identification workshops. These workshops, in combination with the preferred alternative, should help to improve the accuracy of dealer reports as well as quota monitoring and stock assessments. Fishermen could experience, in the short-term, some adverse economic costs associated with the preferred alternative. While initial adjustments may have to be made to the offloading and processing procedures, in the long-term, improved quota monitoring and stock assessment data as a result of this alternative could result in an increased quota and, therefore, mitigate any short-term economic costs for both fishermen and dealers.

Prohibiting the sale and purchase of HMS in excess of retention limits (Issue 3 in the regulatory housekeeping section) should reinforce existing possession limits and prohibitions, thus further discouraging this illegal activity. Extending the East Florida Coast closed area to the EEZ (Issue 4 in the regulatory housekeeping section) is not expected to reduce fishing effort, as vessels would likely relocate to nearby areas with similar catch rates, but would better comply with the original intent of the closure.

Preferred alternative I5(b), which would require that all handlines remain attached to, or in contact with, all vessels is expected to produce minor positive ecological benefits by preventing future uncontrolled expansion of this gear sector. Positive ecological benefits could also be realized by a reduction in the amount of gear that could get lost at sea. However, because this alternative could restrict or limit fishing effort, it could potentially produce social and economic costs, including an unquantifiable reduction in catches of target species for vessels that participate in this fishery. This could reduce opportunities for the United States to fully utilize its ICCAT swordfish quota, which has had consistent underharvests in recent years. Authorizing buoy gear in the swordfish handgear fishery under alternative H5 should mitigate this impact.

A prohibition on the possession of billfish on HMS–permitted commercial vessels (Issue 6 in the regulatory housekeeping section) provides clarity and consistency with other HMS regulations, but is not expected to impose any economic costs as the sale of billfish is already prohibited.

The alternatives to facilitate reporting and improve administration would provide clarity and eliminate ambiguities in current regulations and practices (Issues 7, 8, and 9 in the regulatory housekeeping section). In the case of regulatory housekeeping Issue 7, NMFS would facilitate the electronic submittal of BFT dealer reports, while still maintaining current methodologies. Requiring the submission of negative reports (Issue 8 in the regulatory housekeeping section) would eliminate ambiguities by implementing a standard practice in most regions and a requirement that is already approved under the current PRA submission. Based upon public comment to provide additional flexibility for absentee vessel owners, NMFS has modified the preferred alternative in Issue 9 to allow vessel owners or their designee to report non-tournament recreational landings of swordfish and billfish.

Under preferred alternative I10(c), NMFS would conduct additional discussions during the annual ICCAT meeting regarding the long-term implications of allowing unused BFT quota from the previous year to be added to the subsequent year's allocation. This alternative is not expected to produce adverse ecological impacts. Depending upon the results of the ICCAT discussions, the regulations and operational procedures that account for BFT bycatch related to pelagic longline fisheries in the vicinity of the management area boundary may need to be further amended in the future. In the interim, NMFS would maintain the current regulatory text implementing the ICCAT recommendation, but would amend the practice of allowing under/overharvest of this set-aside allocation to be rolled into, or deducted from, the subsequent fishing year's set-aside allocation. Not allowing set-aside quota to be carried forward to the subsequent fishing year will maintain PLL fishing effort at current levels and still allow for incidentally caught BFT in the NED to be accounted for. However, this alternative may have some negative economic impacts, as it will not allow for the potential economic gain attributed to quota being carried forward from the preceding fishing year. This alternative is preferred because it meets the objective of clarifying the applicability of carry-over provisions to this incidental set-aside quota, still provides 25 mt (ww) to account for incidental BFT catch in the NED, prevents the 'stockpiling' of incidental quota which may provide an incentive to target BFT in the NED, and supports the discussion of long-term implications of BFT quota roll-overs. The outcome of these discussions will directly affect, and possibly mitigate, the implementation of this specific ICCAT recommendation.

Preferred alternative I11(b) would implement a permit condition requiring recreational vessels with a Federal permit to abide by Federal regulations, regardless of where they are fishing, unless a state has more restrictive regulations. This alternative is expected to achieve increased consistency between state and Federal regulations for Federally permitted HMS recreational fishermen, result in less confusion on behalf of fishermen, and improve enforcement and compliance. Compared with the no action alternative, the preferred alternative is expected to produce greater ecological benefits with few resulting social and economic s costs. This could mean, however, that different regulations will apply to Federally permitted fisherman fishing in state waters next to a state-only permitted fisherman. While it may appear to be unfair to the Federally permitted fisherman if the Federal regulations for that species are more restrictive than the state regulations for that species, Federally permitted fishermen also have the opportunity to fish for HMS outside of state waters. If Federally permitted fishermen decide that the opportunity is not worth the additional restrictions, they could decide not to obtain a Federal permit in order to mitigate any adverse impacts.

5.2 Unavoidable Adverse Impacts

In general, there are no unavoidable adverse impacts as a result of the preferred alternatives for the finetooth shark, northern albacore, BFT management, and fishing year issues. NMFS would continue to monitor the impact of the preferred alternatives of all issues and would propose additional management measures, as necessary, to avoid any unanticipated adverse impacts.

The preferred alternatives identified for workshops are necessary to meet the requirements of the October 2003 and June 2004 BiOps, thereby minimizing the impacts on protected resources, consistent with the Magnuson-Stevens Act, ESA, and MMPA. The preferred workshop alternatives are expected to have positive conservation benefits for sharks and protected resources with minimal social and economic impacts on longline and gillnet vessel owners and operators, as well as Federal shark dealer permit holders. The resulting economic or social costs of attending the workshops are unavoidable.

The preferred alternatives for time/area closures would not, at this time, implement any additional closures to reduce bycatch, including bycatch of Atlantic billfish, BFT, or sea turtles, except for establishing complementary measures for the Madison-Swanson and Steamboat Lumps Marine Reserves. Existing closures would remain unchanged. Part of the reason that NMFS is not adding new closures (other than the Madison-Swanson and Steamboat Lumps Marine Reserves) or modifying existing closures is because none of the alternatives considered would reduce bycatch of all of the species considered and many of the closures would result in only minimal impacts on one or more of those species while also having large social and economic impacts. In addition, all of the analyses on bycatch were based on J-hook data. NMFS currently has only analyzed six months of data with circle hooks (required in the pelagic longline fishery since July 2004). NMFS is also unsure of the current fishing effort as a result of Hurricanes Katrina and Rita in Fall 2005. NMFS expects that 2005 logbook data will be fully quality controlled and available for use in late Spring/Summer 2006. Once these data are available, NMFS should be better able to analyze circle hook data and the impacts of the hurricanes on the fleet. NMFS would continue to monitor bycatch and fishing effort and would consider these and other closures to reduce bycatch, to the extent practicable, as necessary.

As previously discussed, the preferred alternatives for billfish are not anticipated to have adverse ecological impacts on target species, non-target species, or protected resources, but some may have minor socio-economic impacts, which could be heightened at a local level in some instances. Furthermore, while the preferred alternatives are not anticipated to have adverse ecological impacts, NMFS cannot predict angler behavior. If implementation of the preferred alternatives results in substantial changes in angler effort or behavior, then there could be minor adverse ecological impacts for species with which billfish anglers interact by possibly increasing discards and/or retention of those species. In considering the alternatives, NMFS preferred alternatives that would minimize the adverse impacts while maximizing the positive impacts. Thus, any resulting economic or social impacts are unavoidable.

Under the preferred alternatives for authorized fishing gear, the potential exists for increased landings of BAYS tunas and swordfish. Alternatives H2 and H7, respectively, authorize the use of spearguns to target BAYS tunas recreationally and buoy gear to target

swordfish commercially. Any potential increase in landings would likely be minor. In the case of swordfish, U.S. fishermen are not fully harvesting the current ICCAT recommended quota.

As described above, in aggregate, the preferred alternatives in the regulatory housekeeping section are expected to have minor positive conservation benefits for HMS, bycatch species, and protected resources with minimal social or economic impacts on HMS fishery participants. This is because the preferred alternatives were specifically selected to mitigate any potential adverse impacts, yet still accomplish the objectives of this rulemaking. Any resulting economic or social impacts, beyond those described above, are unavoidable.

5.3 Irreversible and Irretrievable Commitment of Resources

The preferred alternatives identified for all the issues in this final HMS FMP are not expected to result in any irreversible and irretrievable commitment of resources.